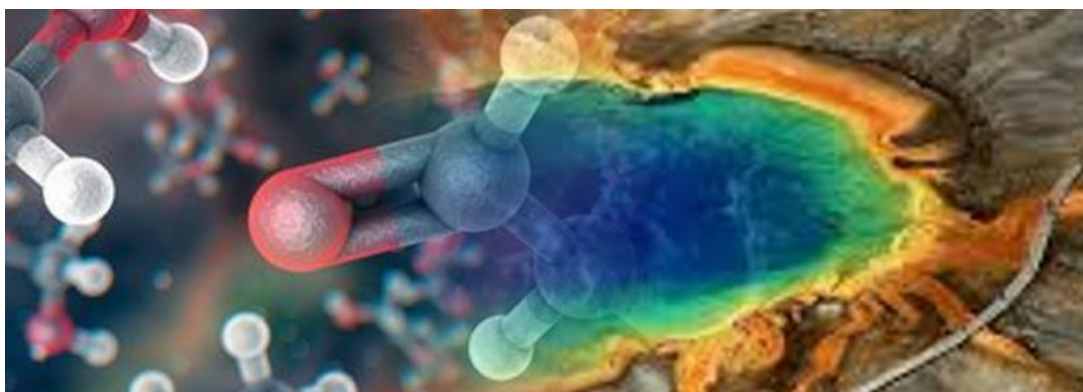




## Combined Techniques for the Detection of Biosignatures: Preparation for Mars Sample Return

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In harsh, ancient and distant environments, recognizing the remains of life can be extremely difficult. In these settings, our usual techniques may fail and ways must be developed that allow records of past life to be recognized when only small amounts of sample and residual fragments of organic records remain.

This project will use a combination of techniques from synchrotron analysis, through mass spectrometry, to specific techniques developed in the Imperial College Organic Geochemistry group. State of the art techniques will be applied to both reasonably well understood and contentious samples from ancient Earth rocks and, where appropriate, their modern equivalents. The work will help to prepare methods and analytical strategies for samples returned from Mars in the next decade, in addition to training a research scientist in the skills required to take part in the analyses themselves.

The research will use analytical chemistry equipment in the Imperial College Organic Geochemistry Laboratories, coupled with synchrotron-based techniques. Full training will be provided. The project would suit an applicant who is enthusiastic about geochemistry, the origin and distribution of life in the solar system and space missions.

The ideal candidate will have a background in Earth Science, Chemistry, Planetary Science or a subject that develops similar skills. Contact: Professor Mark Sephton

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<https://www.imperial.ac.uk/earth-science/prosp-students/phd-opportunities/apply/>. Funding details can be found at: <https://www.imperial.ac.uk/earth-science/prosp-students/phd-opportunities/funding/>